

# The Total Eclipse of May 28, 1900

Lyon, Jas A

*Christian Observer* (1840-1910); Jun 20, 1900; 88, 25; American Periodicals

pg. 8

For the *Christian Observer*.

## The Total Eclipse of May 28, 1900

BY PROF. JAS. A. LYON.

It was the privilege of the writer to realize a long cherished hope and desire, when on the morning of May 28 he found himself in the camp of the University of Virginia eclipse expedition, located in the pleasant old-fashioned South Carolina town of Winnsboro. Our camp was on a bald piece of high ground in the eastern border of Winnsboro, overlooking a broad sweep of river valley toward the east. The air was clear and cloudless, with a brisk breeze from the southwest. The moment had almost arrived when, according to the predictions of the astronomers, made years ago, the moon was to begin her transit across the face of the sun. Just a few feet to my right Prof. Henry L. Smith, of Davidson College, N. C., stood at his telescope, as I was at mine, our purpose being not so much to make any special observations as to take in during the brief ninety seconds of totality, the whole phenomenon with all its surroundings. Just on my left were my son, Jas. Adair Lyon and Mr. Eastwood, both from the Leander McCormick Astronomical Observatory, University of Virginia. They had charge of four photographic cameras, mounted on a "polar axis," driven by a weight and regulated by a "water clock." The purpose of this was to keep the cameras pointed steadily toward the sun, following its motion as it rose higher and higher in the sky. One of these cameras was arranged with a specially made color screen, allowing only greenish light to pass, the object being to photograph the peculiar green light of the "corona." With the cameras a number of exposures were to be made during totality, some of longer and some of shorter duration.

A little further off was the "Transit House;" made of boards and canvas. Prof. Stone, of the University of Virginia, occupied this, viewing the eclipse through a six-inch telescope. His special work was to note the exact times of the "contacts." This building also contained the transit instrument with which the exact latitude and longitude of the station had been previously determined; also the chronograph, run by clock work, and on which, by the aid of electricity, the exact fraction of a second when each contact occurred was registered. These "contacts" were: 1. When the edge of the moon first touched the edge of the sun. 2. (More than hour later) when the face of the sun was completely covered—this was the beginning of totality. 3. When the bright limb of the sun reappeared from behind the moon. 4. When the moon passed completely off the sun's disk. This building was also connected by telegraph with the United States Naval Observatory in Washington, D. C., and every day about noon, we were connected directly with their astronomical clock, so that every swing of its pendulum caused a click audible to us, and we could thus get the exact "Washington time."

About thirty steps further toward the south stood Mr. Morgan, of the University of Virginia, and with him young Charlie Olivier, of Charlottesville, a sixteen-year-old youth whose enthusiasm, steadiness and knowledge of astronomy might easily put to the blush many an older man. They were using telescopes, observing contacts and noting the times on a chronometer. Olivier also took a snap with a camera at the shadow "fringes" seen just before totality as they played over the white surface of a tent.

The largest piece of apparatus of all remains to be described—the great forty-foot Photo helio-graph. It was located on the western brow of the hill so as to take advantage of the slope of the ground. A lens, six inches in diameter and of forty feet focal length, which had formerly been used making photographs of the transit of Venus in 1882 was loaned to the expedition by the United States Government. It was mounted on the upper end of a pyramidal tower, substantially built of framing lumber. To secure steadiness a similar larger structure surrounded this and supported the forty-foot tube which led down to the dark chamber, which was a pit dug out in the side of the hill below. This tube was made of heavy canvas lined with black cloth and was tapering in shape, being several feet in diameter at the lower end and narrow at the top where the lens was

Reproduced with permission of the copyright owner.

placed. This canvas tube was carried inside of a framework made of gas-pipe and stiffened by heavy wire braces. The gas-pipe framing complete, was the frustum of a pyramid, about forty feet long, five feet square at the lower end and one and a half feet square at the top. By careful engineering this camera tube was pointed exactly to that part of the sky where the sun would be at the time of the total phase of the eclipse. To follow the sun in its motion during the eclipse, instead of turning the whole tube, the photographic plates were made to travel along a little track, in the dark chamber, at the exact rate at which the sun's image moved.

Mr. Mayo, of the University of Virginia, had charge of this part of the work, and he was ably assisted by Mr. Hanahan, a lawyer of Winnsboro, who kindly volunteered to assist him. These men had to sacrifice themselves to the demands of science, as they were buried down in the ground, in that dark chamber during the most interesting part of the eclipse. During the short period while the eclipse remained total, they had to expose ten or twelve photographic plates, 14x17 inches in size, and had to make the exposures of various lengths, from one second to twelve seconds. To do this accurately, and within the given time, they held many rehearsals until they became quite expert. Besides these structures there were two tents in the camp for the accommodations of the party. A flag made in the colors, and bearing the name of the University of Virginia, fluttered gaily from the mast on top of the Photo-helio-graph tower.

After the first contact, which was exactly on time, every man watched the body of the moon slowly eating its way into the sun's disk. Little apparent change in the landscape occurred until ten or fifteen minutes before totality. Then the air became perceptibly cooler, the breeze which had been brisk dropped to almost nothing, as generally occurs in fair weather late in the evening, and probably from the same cause. The sky in the southwest grew darker and darker as the great shadow sped toward us at the rate of about 1,250 miles per hour. I had covered one of my eyes with a dark cloth, so as to have it more sensitive to the faint streamers of the "corona," reserving the other eye to make general observations. Just before the shadow was upon us, I uncovered this eye. For a second or two, the mysterious shadow "fringes" played over the ground and on the white surfaces of the tents. They appeared like shadows of ripples in clear water when the sun shines through it upon a white sandy bottom. They ran along like waves, travelling from the southwest, and appeared to me about a foot or less apart. The direction from which they came was that from which the shadow was approaching, and also with the wind. A moment later and the eclipse was complete.

The density of the shadow and the darkness of totality were rather disappointing. This was probably due to the general clearness of the air and the narrowness of the shadowed area around us, which allowed a good deal of light to be thrown in from the surrounding regions where the sun was shining. "The "corona" was also unusually large and brilliant, and gave much light. Rosy tints like those of sunrise and sunset were noticed around the horizon. Looking at the sun, two great streams of pearly white were seen springing out from the east and west limbs, and extending as far as two or three diameters of the sun. Shorter streams of light radiated from the north and south limbs. This was the much discussed "corona," whose mysteries we are now trying to solve. Looking through the telescope did not add to the general beauty of the scene, but brought to view a number of the so-called "prominences," around the margin of the sun and moon. One of these was specially notable, being in shape like a great shock of corn stalks, and by my estimate must have been from 60,000 to 80,000 miles high. These prominences were not so red as I had been led to expect, but more of a light pink verging toward white. The spectroscope has proved these prominences to be chiefly composed of erupted masses of blazing hydrogen gas.

The ninety seconds passed all too soon; seemingly the time was not more than half a minute; then the brilliant western limb of the sun appeared, the shadow "fringes" flickered over the ground again, the shadow rushed away toward the northeast, and the light steadily increased. I did not look around the sky for stars, but saw Mercury shining brightly close to the sun. The temperature, which had fallen about six degrees, soon began to rise rapidly, and the warm May morning was restored to its normal condition. A little past ten o'clock the last contact was noted, and the great event was over. Our photographic plates were not to be developed till later, but, as far as we could judge, everything had passed off smoothly and successfully.

The pleasure of the trip was not a little enhanced by the kind and hospitable treatment our party received from the good people of Winnsboro. The writer feels especially indebted to Prof. Witherow, the veteran educator of the place; to Mr. Douglas and son, who are prominent members of the bar, and to Mr. and Mrs. Flemiken, at whose bountiful board we sat day after day. Altogether the total eclipse of 1900 is a red letter event to me, and my warmest thanks are due to the

Further reproduction prohibited without permission.

University of Virginia party, by whose courtesy I was  
allowed to be of their number.

S. W. P. UNIVERSITY.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.